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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
VINH, LAN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/043,534	CHOU ET AL.	
	Examiner	Art Unit	
	Lan Vinh	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,6 and 9-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6 and 9-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 5-6 of the response, filed 6/5/2006, with respect to rejection(s) of claims 1-3,6, 15 under 35 U.S.C 102(e) as being anticipated by Ohashi (US 6,190,443) have been fully considered and are persuasive. The rejection has been withdrawn.

However, Applicant's arguments filed 6/5/2006 with respect to the rejection(s) of claims 1-3, 5-6, 10-13, 15-18, 20-24, 26-27 under U.S.C 103(a) have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references of Motonari and Sinha because there is no teaching or suggestion in the Motonari patent to incorporate any buffering agent in the polishing composition, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, since Motonari discloses that the pH of the polishing composition is preferably 1-9 or can be adjusted (col 6, lines 37-39) and various additives may also be included as necessary (col 7, lines 4-7) while Sinha teaches that one or more buffers such as ammonium oxalate may be used to adjust the pH of the slurry/polishing composition to a desired level (col 6, lines 7-10),

one skilled in the art at the time the invention was made would have found it obvious to have incorporated Sinha teaching in the polishing composition of Motonari to produce the claimed invention

The applicants also argue that to achieve the desired outcome resulting from the use of the polishing composition of the Motonari reference, the ordinary skilled artisans is directed to an acidic polishing composition while claim 1 requires a pH of 8-12. This argument is unpersuasive because Motorani also clearly discloses that the pH of the aqueous composition is preferably 1-9 (col 6, lines 26-30), which certainly overlaps the claimed pH range of 8-12

The applicants further argue that there is no suggestion to combine the references of Motonari and Sinha because Sinha discloses that the polishing composition desirably has a pH of about 3-7. This argument is unpersuasive because while it is true that Sinha discloses that the polishing composition desirably has a pH of about 3-7, Sinha is relied on only for the teaching of "one or more buffers such as ammonium oxalate may be used to adjust the pH of the slurry/polishing composition to a desired level", the claimed pH range is taught by Motorani. For the above reasons, the rejection(s) of claims 1-3, 5-6, 10-13, 15-18, 20-24, 26-27 under U.S.C 103(a) as being unpatentable over Motorani et al (US 6,447,695) in view of Sinha et al (US 6,551,935) are maintained in this office action

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3 Claims 1-3, 5-6, 10-13, 15-18, 20-24, 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motorani et al (US 6,447,695) in view of Sinha et al (US 6,551,935)

Motorani discloses an aqueous dispersion composition and a polishing system for CMP a substrate. The polishing system includes water/liquid carrier (col 2, lines 55-57), a polishing pad and abrasive (col 10, lines 21-23; col 3, lines 49-50), fumed silica (col 3, lines 49-54; Table 1), a hydroxyl coupling agent (col 4, lines 30-36). Motorani also discloses that the aqueous dispersion composition for CMP contains no oxidizing agent, the pH of the aqueous dispersion may be adjusted, the pH is preferably 1-9 (which overlaps the claimed range of 8-12) (col 6, lines 25-60), and various additives can be included in the composition (col 7, lines 5-6)

Unlike the instant claimed invention as per claim 1, Motorani fails to disclose using ammonium oxalate in the aqueous dispersion composition

Sinha discloses a method for using a planarizing solution comprises the step of using ammonium oxalate in an aqueous polishing composition employed in a polishing system includes a polishing pad and abrasives (col 5, lines 14-18; col 6, lines 15-20)

Since Motorani is directed to a polishing system for polishing metal using an aqueous dispersion composition/slurry that includes additive, one skilled in the art at the time the

invention was made would have found it obvious to modify Motorani composition by adding ammonium oxalate in the aqueous dispersion composition as per Sinha because Sinha discloses that one or more buffers such as ammonium oxalate may be used to adjust the pH of the slurry to a desired level (col 6, lines 7-10)

Unlike the instant claimed invention as per claim 5, Motorani fails to disclose using a fixed abrasive polishing pad

Sinha also discloses using a fixed abrasive polishing pad in one of the embodiment (col 8, lines 33-34)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Motorani polishing system by using a fixed abrasive polishing pad as per Sinha because Sinha discloses that clean pre-operative sections of the fix-abrasive pad may be quickly substituted for used sections to provide a consistent surface for planarizing (col 8, lines 38-42)

The limitations of claims 2-3, 6 have been discussed above

Regarding claims 10-12, Motorani discloses using benzotriazole in the aqueous dispersion composition (col 6, lines 4-5)

Regarding claim 13, Motorani discloses using a silane-containing compound (col 4, lines 31-34)

Regarding claim 16, Motorani discloses that the pH of the composition is 1-9 (col 6, lines 30-31)

Regarding claims 17-18, 20-24, 26-27, Motorani discloses polishing a substrate comprises Cu, Ta and TEOS wherein the Cu:TEOS removal rate is approximately 0.56/1:2 (Table 1)

4. Claims 9, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motorani et al (US 6,447,695) in view of Sinha et al (US 6,551,935) and further in view of Allman et al (US 6,541,383)

Motorani as modified by Sinha et has been described above. Unlike the instant claimed invention as per claims 9, 14, Motorani and Sinha fail to specifically using ureidopropyltrimethoxylane as the hydroxyl agent

Allman discloses a method for polishing a semiconductor wafer comprises the step of using ureidopropyltrimethoxylane in the aqueous polishing composition (col 7, lines 30-34)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Motorani and Sinha by using ureidopropyltrimethoxylane in the aqueous polishing composition as per Allman because Allman discloses that organofunctional silane such as ureidopropyltrimethoxylane can be utilized as adherence promoting ligands in the polishing composition (col 7, lines 10-13)

5. Claims 19, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motorani et al (US 6,447,695) in view of Sinha et al (US 6,551,935) and further in view of Ni (US 6,503,766)

Motorani as modified by Sinha et has been described above. Unlike the instant claimed invention as per claims 19, 25, Motorani and Sinha fail to disclose the specific removal rate ratio of the Cu and Ta layer

Ni, in a method for CMP, discloses that a polishing rate can be optimized by adjusting a polishing parameter such as polishing agent flow (col 6, lines 3-7)

Thus, one skilled in the art at the time the invention was made would have found it obvious to modify Motorani and Sinha by adjusting the polishing agent flow to optimize the removal rate because Ni discloses that the polishing rate is a result-effective variable in the same field of endeavor

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LV
July 24, 2006